COVID-19 Information
Public health information (CDC) | Research information (NIH) | SARS-CoV-2 data (NCBI) | Prevention and treatment information (HHS) | Español

National Library of Medicine
National Center for Biotechnology Information

Log in

PubMed.gov

Search

Advanced User Guide

Save Email Send to Display options

Clinical Trial > Clin Cancer Res. 2005 May 15;11(10):3828-35.
doi: 10.1158/1078-0432.CCR-04-2326.

Dietary flaxseed alters tumor biological markers in postmenopausal breast cancer

Lilian U Thompson [1], Jian Min Chen, Tong Li, Kathrin Strasser-Weippl, Paul E Goss

Affiliations + expand

PMID: 15897583 DOI: 10.1158/1078-0432.CCR-04-2326
Free article

Abstract

Purpose: Flaxseed, the richest source of mammalian lignan precursors, has previously been shown to reduce the growth of tumors in rats. This study examined, in a randomized double-blind placebo-controlled clinical trial, the effects of dietary flaxseed on tumor biological markers and urinary lignan excretion in postmenopausal patients with newly diagnosed breast cancer.

Experimental design: Patients were randomized to daily intake of either a 25 g flaxseed-containing muffin (n = 19) or a control (placebo) muffin (n = 13). At the time of diagnosis and again at definitive surgery, tumor tissue was analyzed for the rate of tumor cell proliferation (Ki-67 labeling index, primary end point), apoptosis, c-erbB2 expression, and estrogen and progesterone receptor levels. Twenty-four-hour urine samples were analyzed for lignans, and 3-day diet records were evaluated for macronutrient and caloric intake. Mean treatment times were 39 and 32 days in the placebo and flaxseed groups, respectively.

Results: Reductions in Ki-67 labeling index (34.2%; P = 0.001) and in c-erbB2 expression (71.0%; P = 0.003) and an increase in apoptosis (30.7%; P = 0.007) were observed in the flaxseed, but not in the placebo group. No significant differences in caloric and macronutrient intake were seen between groups and between pre- and posttreatment periods. A significant increase in mean urinary lignan excretion was observed in the flaxseed group (1,300%; P < 0.01) compared with placebo controls. The total intake of flaxseed was correlated with changes in c-erbB2 score (r = -0.373; P = 0.036) and apoptotic index (r = 0.495; P < 0.004).

Conclusion: Dietary flaxseed has the potential to reduce tumor growth in patients with breast cancer.

Similar articles

Flaxseed influences urinary lignan excretion in a dose-dependent manner in postmenopausal women.
Hutchins AM, Martini MC, Olson BA, Thomas W, Slavin JL.
Cancer Epidemiol Biomarkers Prev. 2000 Oct;9(10):1113-8.
PMID: 11045796 Clinical Trial.

A randomized controlled trial of the effect of dietary soy and flaxseed muffins on quality of life and hot flashes during menopause.
Lewis JE, Nickell LA, Thompson LU, Szalai JP, Kiss A, Hilditch JR.
Menopause. 2006 Jul-Aug;13(4):631-42. doi: 10.1097/01.gme.0000191882.59799.67.
PMID: 16837885 Clinical Trial.

The effect of a lignan complex isolated from flaxseed on inflammation markers in healthy postmenopausal women.
Hallund J, Tetens I, Bügel S, Tholstrup T, Bruun JM.
Nutr Metab Cardiovasc Dis. 2008 Sep;18(7):497-502. doi: 10.1016/j.numecd.2007.05.007. Epub 2008 May 23.
PMID: 18502107 Clinical Trial.

Can the combination of flaxseed and its lignans with soy and its isoflavones reduce the growth stimulatory effect of soy and its isoflavones on established breast cancer?
Power KA, Thompson LU.
Mol Nutr Food Res. 2007 Jul;51(7):845-56. doi: 10.1002/mnfr.200600218.
PMID: 17579892 Review.

Flaxseed and its lignan and oil components: can they play a role in reducing the risk of and improving the treatment of breast cancer?
Mason JK, Thompson LU.
Appl Physiol Nutr Metab. 2014 Jun;39(6):663-78. doi: 10.1139/apnm-2013-0420. Epub 2013 Dec 23.
PMID: 24869971 Review.

See all similar articles

Cited by 41 articles

Polyphenols Modulating Effects of PD-L1/PD-1 Checkpoint and EMT-Mediated PD-L1 Overexpression in Breast Cancer.
Messeha SS, Zarmouh NO, Soliman KFA.
Nutrients. 2021 May 19;13(5):1718. doi: 10.3390/nu13051718.
PMID: 34069461 Free PMC article. Review.

Vincetoxicum arnottianum modulates motility features and metastatic marker expression in pediatric rhabdomyosarcoma by stabilizing the actin cytoskeleton.
Adamus A, Ali I, Vasileiadis V, Al-Hileh L, Lisec J, Frank M, Seitz G, Engel N.
BMC Complement Med Ther. 2021 May 4;21(1):136. doi: 10.1186/s12906-021-03299-x.
PMID: 33947373 Free PMC article.

Vitexin attenuates epithelial ovarian cancer cell viability and motility *in vitro* and carcinogenesis *in vivo* via p38 and ERK1/2 pathways related VEGFA.
Zhao S, Guan X, Hou R, Zhang X, Guo F, Zhang Z, Hua C.
Ann Transl Med. 2020 Sep;8(18):1139. doi: 10.21037/atm-20-5586.
PMID: 33240988 Free PMC article.

Medicinal Herbs Used in Traditional Management of Breast Cancer: Mechanisms of Action.
McGrowder DA, Miller FG, Nwokocha CR, Anderson MS, Wilson-Clarke C, Vaz K, Anderson-Jackson L, Brown J.
Medicines (Basel). 2020 Aug 14;7(8):47. doi: 10.3390/medicines7080047.
PMID: 32823812 Free PMC article. Review.

Dietary Phenolics against Breast Cancer. A Critical Evidence-Based Review and Future Perspectives.
Ávila-Gálvez MÁ, Giménez-Bastida JA, Espín JC, González-Sarrías A.
Int J Mol Sci. 2020 Aug 10;21(16):5718. doi: 10.3390/ijms21165718.
PMID: 32784973 Free PMC article. Review.

See all "Cited by" articles

Publication types

- Clinical Trial
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

MeSH terms

- Administration, Oral
- Aged
- Biomarkers, Tumor / analysis*
- Breast Neoplasms / drug therapy*
- Breast Neoplasms / pathology*
- Diet
- Double-Blind Method
- Female
- Flax*
- Humans
- Ki-67 Antigen / analysis
- Lignans / urine
- Middle Aged
- Phytotherapy*
- Placebos
- Postmenopause
- Prospective Studies
- Receptor, ErbB-2 / biosynthesis*

Substances

- Biomarkers, Tumor
- Ki-67 Antigen
- Lignans
- Placebos
- Receptor, ErbB-2

Related information

Cited in Books
MedGen
PubChem Compound
PubChem Compound (MeSH Keyword)
PubChem Substance

LinkOut - more resources

Full Text Sources
HighWire

Other Literature Sources
The Lens - Patent Citations

Medical
Genetic Alliance
MedlinePlus Health Information

Research Materials
NCI CPTC Antibody Characterization Program

Miscellaneous
NCI CPTAC Assay Portal

FULL TEXT LINKS
Final Version FREE Clin Cancer Res

ACTIONS
Cite
Favorites

SHARE

PAGE NAVIGATION
Title & authors
Abstract
Similar articles
Cited by
Publication types
MeSH terms
Substances
Related information
LinkOut - more resources

NCBI Literature Resources MeSH PMC Bookshelf Disclaimer

FOLLOW NCBI

Connect with NLM

National Library of Medicine
8600 Rockville Pike
Bethesda, MD 20894

Web Policies
FOIA

Help
Accessibility
Careers

NLM | NIH | HHS | USA.gov